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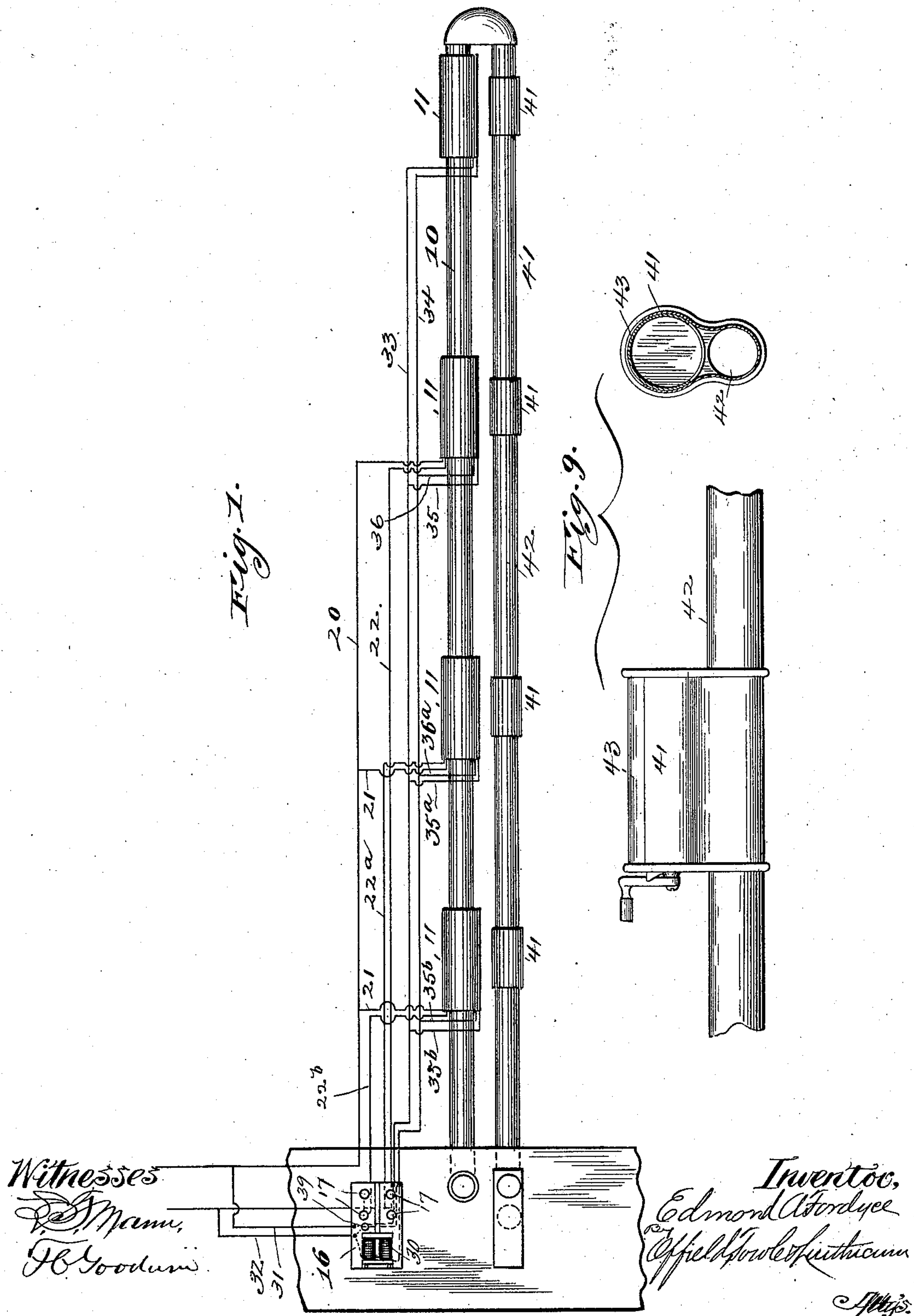
5 Sheets—Sheet 1.

E. A. FORDYCE.

ELECTRIC CONTROLLING APPARATUS FOR PNEUMATIC DESPATCH TUBES.

No. 575,883.

Patented Jan. 26, 1897.



5 Sheets—Sheet 2.

ELECTRIC CONTROLLING APPARATUS FOR PNEUMATIC DESPATCH TUBES.

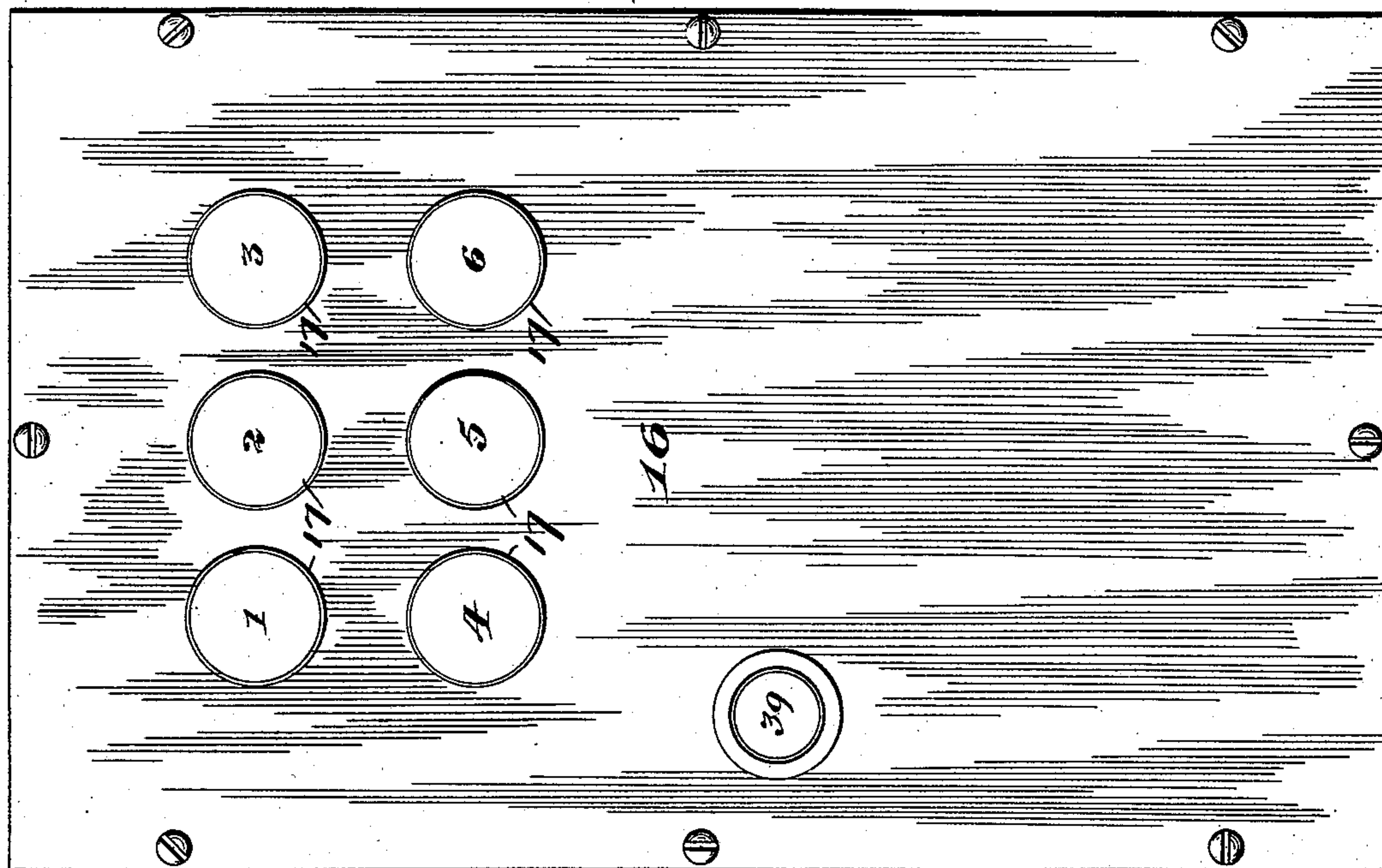
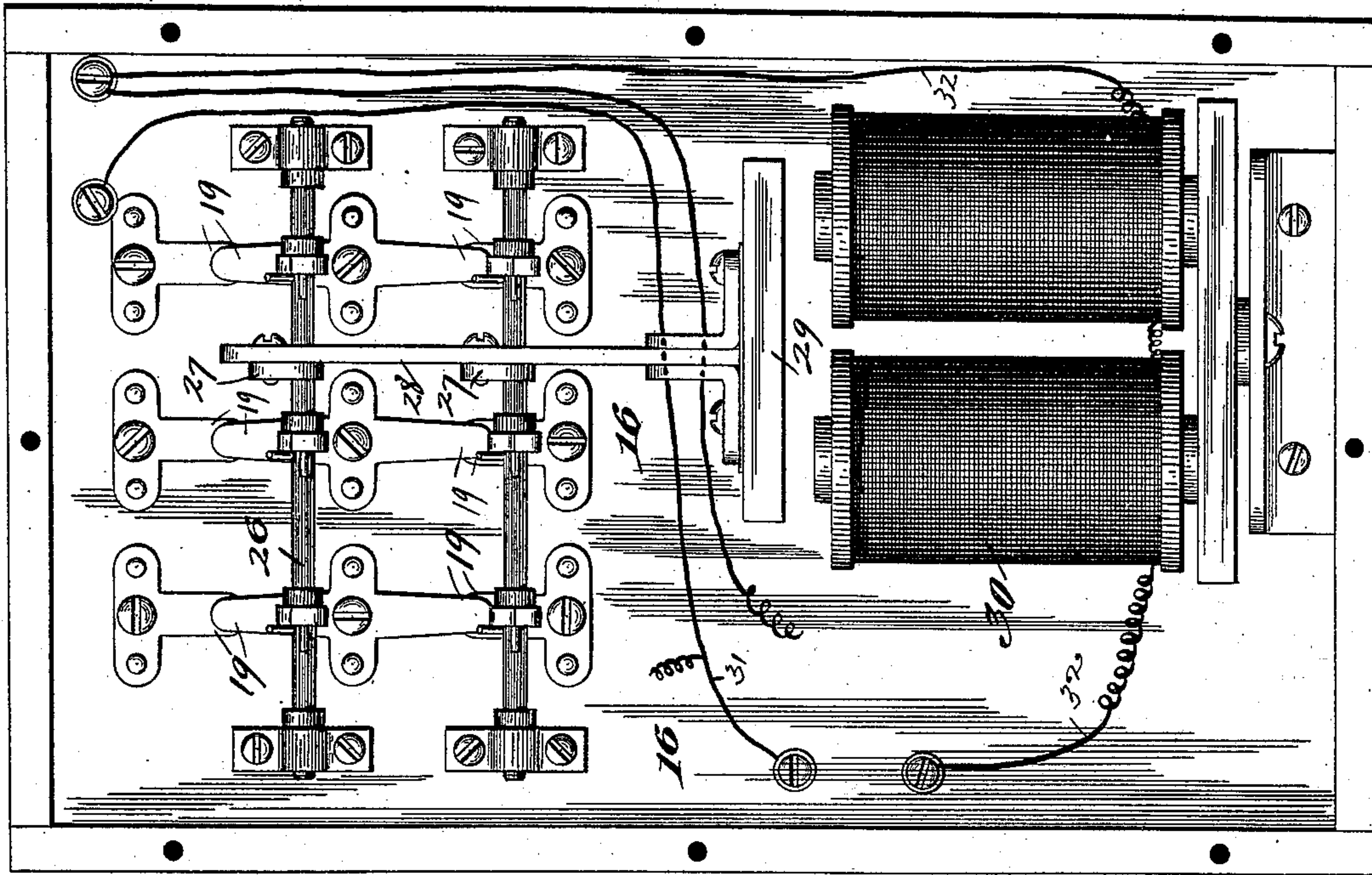
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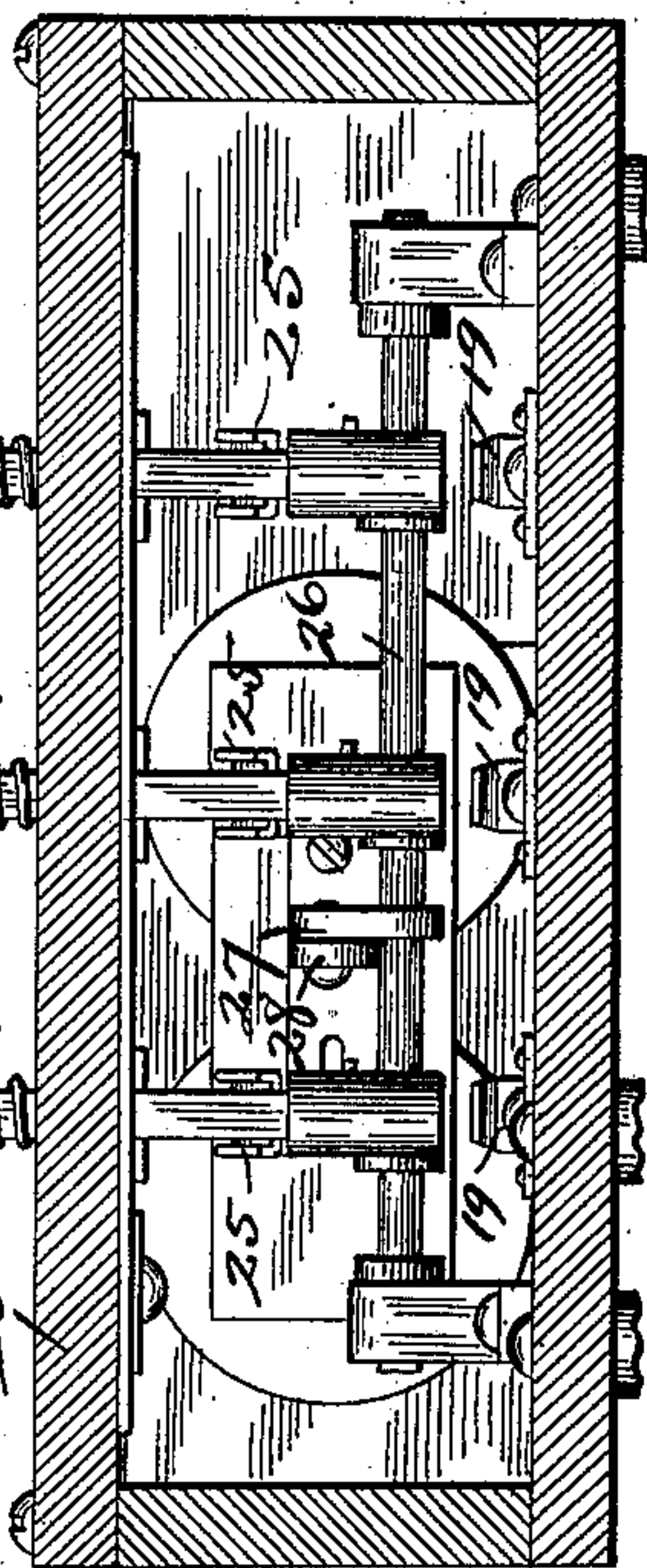
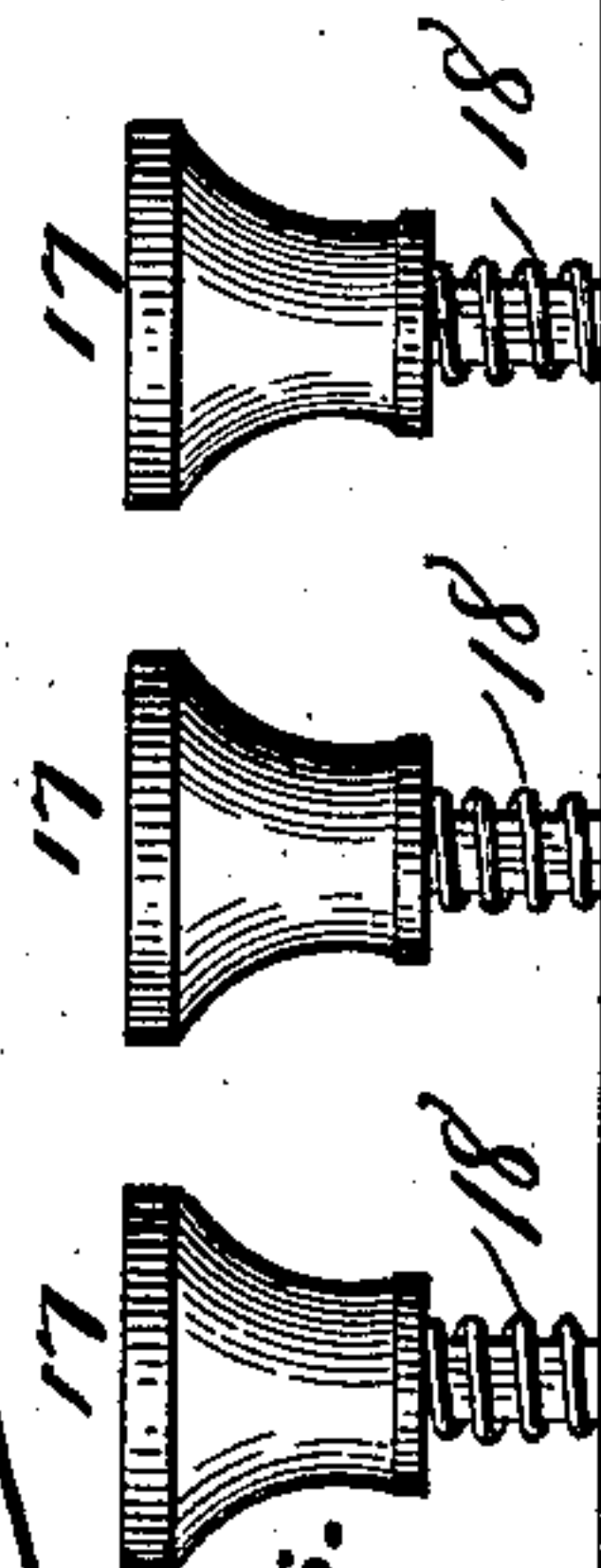
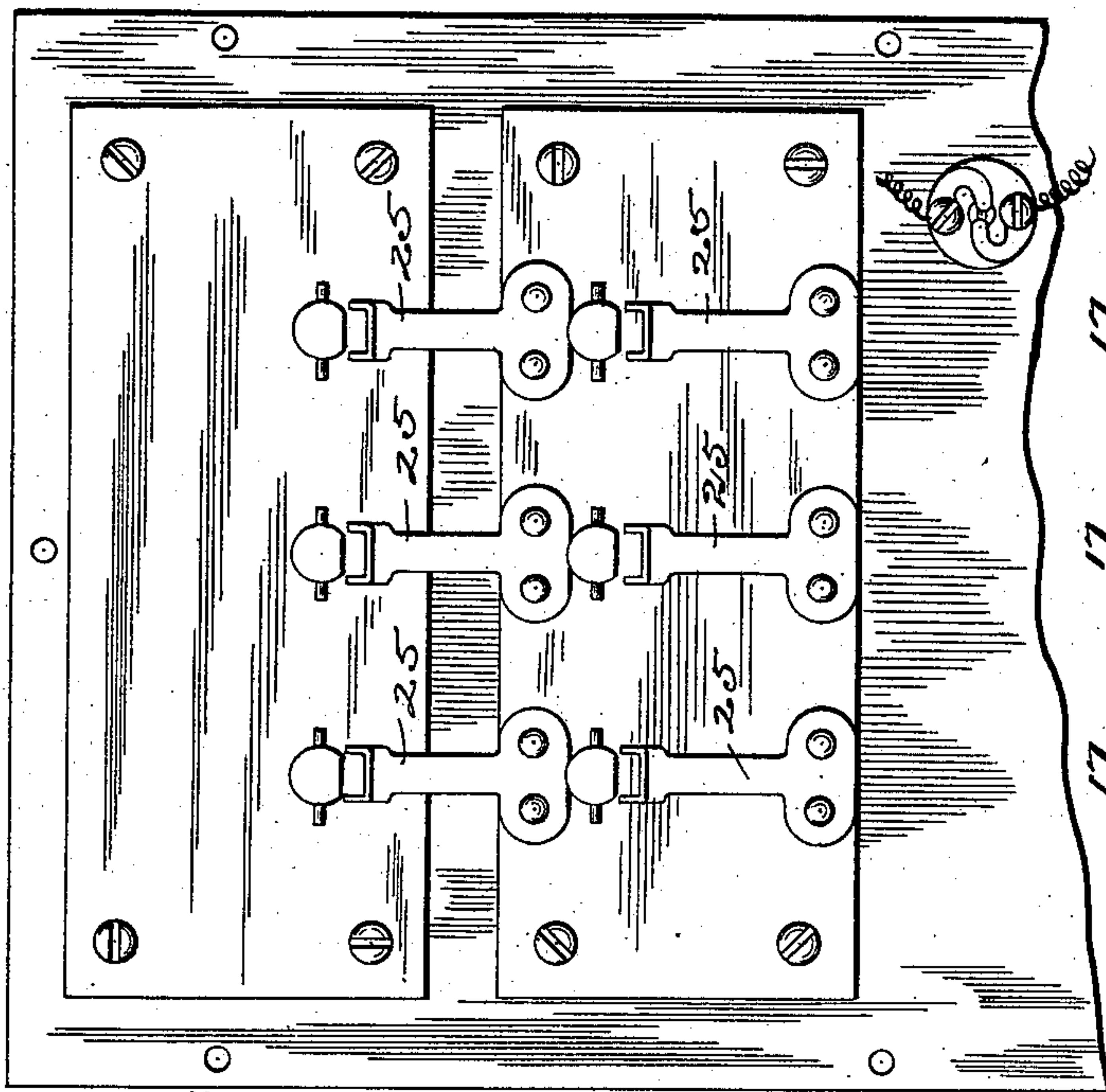
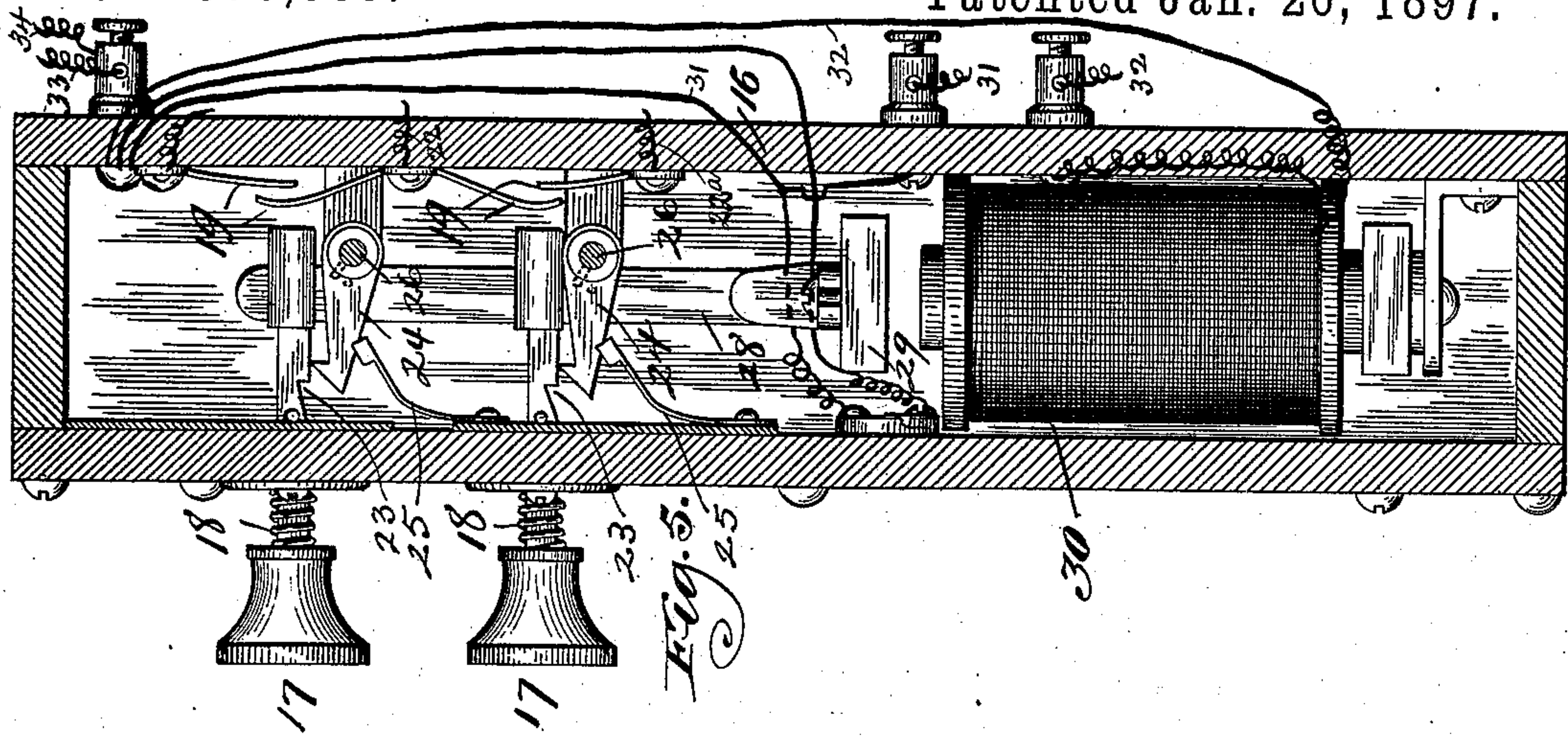
Witnesses,
J. S. Mann,
J. B. Goodwin

Inventor,
Edmond A. Fordyce
By *Field, Fowler & Luthricum*
Attys.

(No Model.)

5 Sheets—Sheet 4.

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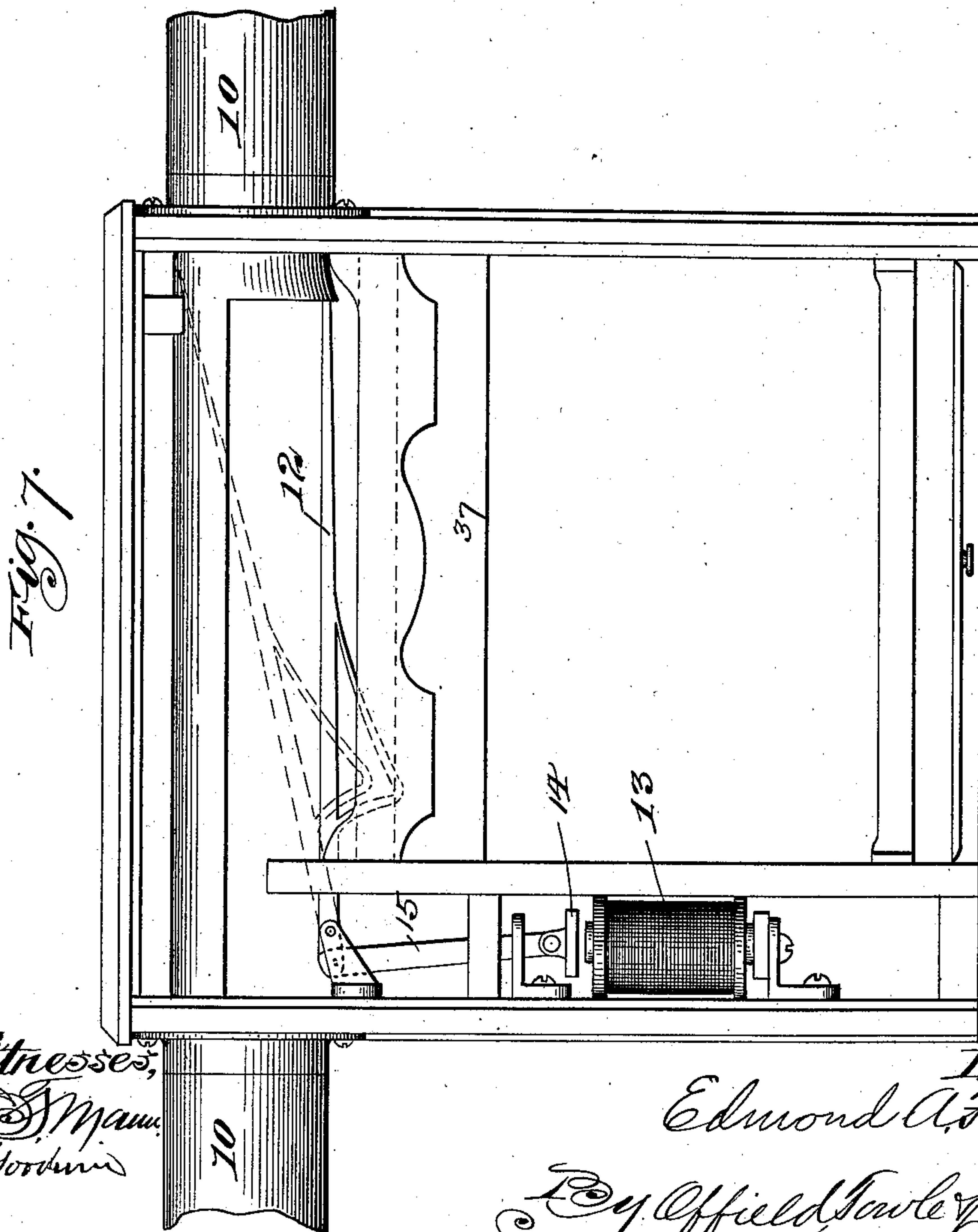
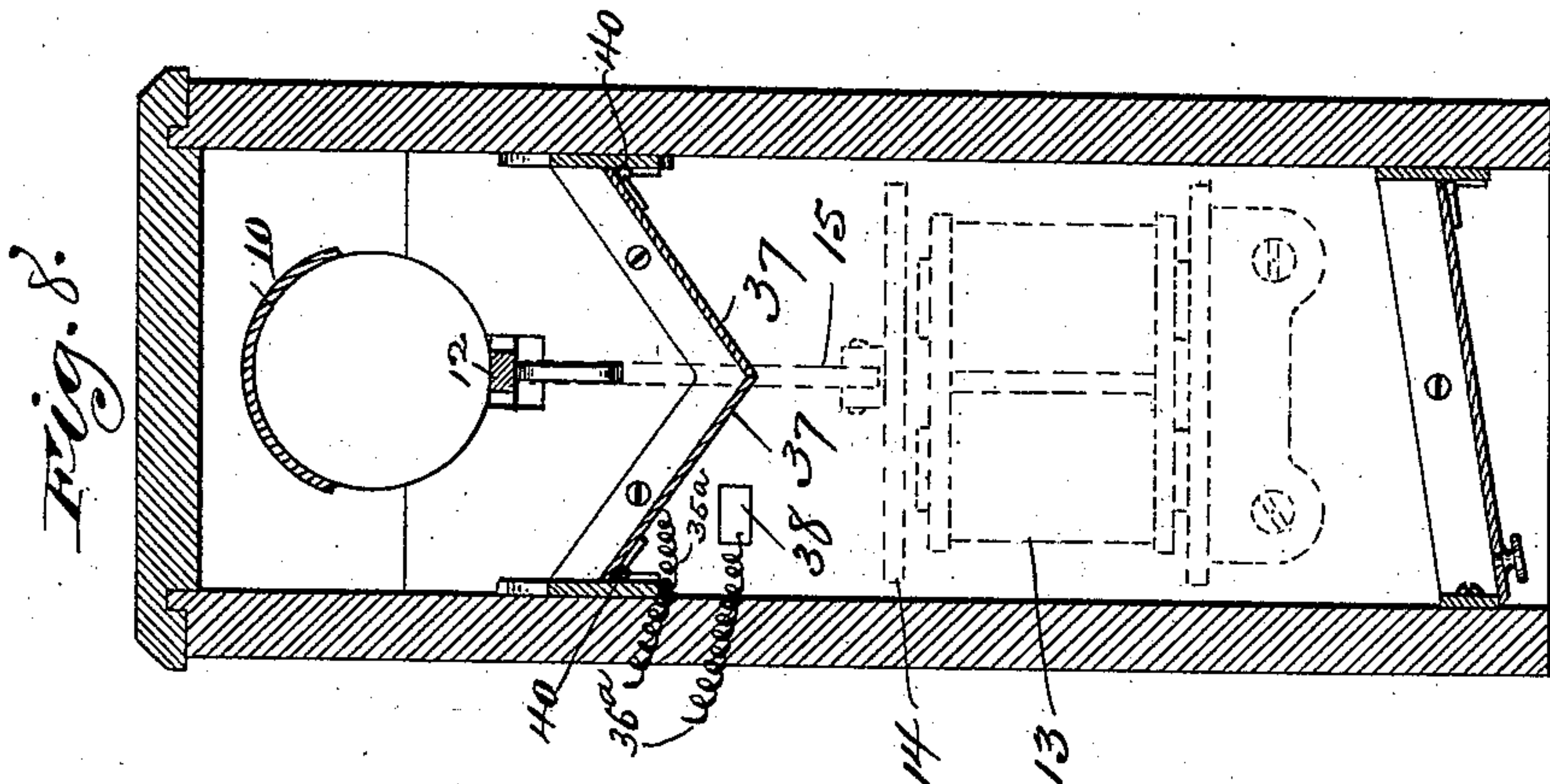
Witnesses,
J. E. Mann,
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(No Model.)

5 Sheets—Sheet 5.

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Witnesses,
J. M. ...
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UNITED STATES PATENT OFFICE.

EDMOND A. FORDYCE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE BOSTEDO
PACKAGE AND CASH CARRIER COMPANY, OF SAME PLACE.

ELECTRIC CONTROLLING APPARATUS FOR PNEUMATIC-DESPATCH TUBES.

SPECIFICATION forming part of Letters Patent No. 575,883, dated January 26, 1897.

Application filed June 23, 1893. Serial No. 478,645. (No model.)

To all whom it may concern:

Be it known that I, EDMOND A. FORDYCE, of Chicago, Illinois, have invented certain new and useful Improvements in Electric Controlling Apparatus for Pneumatic-Despatch Tubes, of which the following is a specification.

This invention relates to an electric switch apparatus which is particularly adapted for use in connection with a pneumatic-despatch-tube system; and it has for its object to provide a switch apparatus by which a number of electric circuits or their branches, each of which controls a switch to deflect a carrier, can be controlled from a switchboard and which is provided with means whereby after an operation of the switch it is locked until released from a distant part of the circuit, either by breaking said circuit or by the closing of a second electrical circuit.

In its application to a despatch-tube system the invention comprises a switchboard having a key or switch-lever for each of the several stations of the system, an electrical circuit including such key, and a magnet which locks said key after it is actuated, and which circuit also includes the controlling-magnet of an electrically-operated switch in the despatch-tube at the distant station, whereby when the circuit is closed the key is locked, the switch is opened, and a carrier, deposited at the cashier's station at which the switchboard is located, is permitted to pass out through the open switch into a receiving-box, the key is released, and the switch returns to its normal position.

In one form of the invention a movable part of the receiver is caused to break the electrical circuit, thus permitting the switch and key to return to their normal positions.

In another form of the invention a second electrical circuit has one of its terminals connected with a moving part of the receiver, preferably one of the hinged doors or valves through which the carrier may pass, and the other terminal is arranged within the path of the movement of such part, whereby as the carrier passes through this second electrical circuit is closed. The conductor of this circuit extends through the magnet located at the switch-box or cashier's station and oper-

ates the releasing device, which is engaged with the key. A correction-key is also provided, whereby should the cashier make a mistake and operate the wrong key a local circuit is closed through the magnet, including the releasing device, and the key may thus be released to correct the error. In the operation of this system whenever the cashier deposits a carrier in the despatch-tube the key controlling the circuit, which includes the station for which such carrier is destined, is operated and the switch raised. This actuation of the key puts in operation a locking mechanism, whereby such key is locked and cannot be again operated until released by the breaking of the circuit or the closing of the second or releasing circuit due to the discharge of the carrier into its appropriate box, or, in case of an error, by the operation of the correction-key.

In the accompanying drawings, Figure 1 is a diagrammatic view showing my invention. Fig. 1^a is a diagrammatic view showing the single-circuit system. Fig. 1^b is a detail view of the receiving-box in such system. Fig. 1^c is a sectional detail of the correction-key used in the single-circuit system. Fig. 1^d is a sectional detail of the correction-key used in the double-circuit system. Figs. 2 to 6, inclusive, are detail views of the switch-box as arranged in the system shown in Fig. 1, in which Fig. 2 is a plan view or face view of the box. Fig. 3 is a similar view with the face-plate and keys removed. Fig. 4 is a rear view of the face-plate, partly broken away and designed particularly to show a series of locking-springs. Fig. 5 is a view in longitudinal sectional elevation through the casing of the switch-box, showing the mechanism in elevation and partly in section; and Fig. 6 is a transverse sectional view through the case, showing the mechanism in end view. Fig. 7 is a side elevation of one of the receiving-boxes with the side wall removed, showing a secondary position of the switch in dotted lines. Fig. 8 is a transverse sectional elevation through the receiving-box and mainly designed to show a contact-plate forming one of the circuit-terminals. Fig. 9 shows two detail views of the salesmen's despatch-boxes.

I will first describe the system as adapted

to the employment of a separate electrical circuit for releasing the key and as shown in Figs. 1 to 9, inclusive. In said figures 10 represents a despatch-tube leading from the cashier's station to the several salesmen's stations, which are marked 11. At each of these stations there is arranged a receiving-box, such as shown in Figs. 7 and 8 of the drawings. The despatch-tube is cut away inside the box, and the aperture is spanned by a pivoted switch 12, which is actuated by the magnet 13, whose armature 14 has a link 15, connected to the switch-arm behind its pivot.

16 represents the switch-box, which is located at the cashier's station and is provided with as many operating-keys 17 as there are stations 11 on the line. Each of these keys is normally upheld by a spring 18 and is capable of sliding through its aperture, so that its lower end may impinge the upper of the spring-contacts 19.

20 represents a line-wire which may receive current from any suitable electrical source. From the wire 20 branch wires 21 lead to the several switch-controlling magnets in the several receiving-boxes 11, except at the end station. The return-wires are marked 22, 22^a, and 22^b, and these return-wires are connected by binding-posts to the bases of the spring-contacts 19. The stems of the keys 17 on being depressed close an electrical circuit through the switch-controlling magnet at the station corresponding to the key depressed, thereby opening the switch and permitting the carrier which is deposited in the tube to be discharged at the proper station.

In order to prevent the opening of a second switch before the one previously opened has been closed, there is provided a locking mechanism for each key, and this locking mechanism comprises a locking notch or shoulder 23 on the stem of the key, a locking-dog 24, and its actuating-spring 25. When the key is depressed, the locking-dog engages the shoulder and holds the key down until it is released in a manner which will now be described.

The several locking-dogs 24 are carried upon rock-shafts 26, and these rock-shafts have short crank-arms 27, whereby they are connected to an actuating-bar 28, which carries on its end the armature 29 of a releasing-magnet 30. Said magnet is included in a second electrical circuit, which is supplied by the branch wires 31 32 and has conductors 33 34 extended along the line of the despatch-tubes and having branch wires carried down to the receiving-box. Said branch wires are marked 35, 36, 35^a, 36^a, and 35^b, and 36^b. The wire 35^a, as shown in Fig. 8, connects to a movable valve or door 37 within the receiving-box, and if this door is of metal it may be utilized as the movable member of a circuit-closer, of which the fixed member may be the contact-plate 38, secured upon the wall of the compartment in which the switch-arm-controlling magnet is placed. To said contact-plate the wire 36^a is connected. Now supposing the switch has

been opened and a carrier deflected into the receiving-box shown in Figs. 7 and 8, as the carrier passes through the hinged door it will close an electrical circuit through the releasing-magnet in the switch-box, and said magnet being energized will attract its armature carrying the releasing-bar, which, through its crank connections, will turn the rock-shaft and release the key by disengaging the dogs and drawing them back against the action of their springs. The key being released will be returned to its normal position by the spring 18, and this will break the circuit of the switch-controlling magnet by permitting the spring-contacts 19 to break contact.

To provide for correcting any error which may be made by the cashier in opening the wrong switch, I have provided the correction-key 39, which is adapted to close a local circuit through the releasing-magnet and thus unlock the key which has been wrongly actuated.

From the above description it will be apparent that any key of the series may be separately actuated to close a circuit through the switch-controlling magnet of the particular station with which said key is connected; that upon the depression of the key it is locked and the switch is held open until released by the carrier passing through the valve; that upon the discharge of the carrier the releasing-magnet is energized and withdraws the lock from the actuating-key and permits the latter to rise, thus breaking the switch-circuit, and the return of the valve under the action of its controlling-spring (marked 40) will break the releasing-circuit and restore the apparatus to its original condition. The same operation is repeated with any of the keys of the system.

I have shown only three stations having releasing devices and an end station; but the device is applicable to any number of stations, depending simply upon the size of the keyboard, and each station having parts corresponding to those described. The carriers are sent to the cashier's station through the despatch-boxes 41 in the despatch-tube 42. These boxes, as shown in Fig. 9, are each provided with a rotating section 43 of semi-cylindrical form, and the construction of which is well understood.

From the above description it will be seen that in addition to the switch-controlling apparatus the release of the key serves as a signal to the operator that the carrier has been discharged at its proper station.

With reference to Figs. 1^a and 1^b it will be seen that a keyboard of similar construction to the one previously described is employed, but of reverse relation between its keys, and the action of the magnet and locking-dogs controlled thereby. In the operation of this form of apparatus before the carrier is placed in the despatch-tube the proper key is depressed and impinges the spring-contacts, thus closing the electric circuit, causing the

magnets 30 and 13 to attract their armatures, thereby locking the key with the spring-contacts and raising the switch at the receiving-box. The carrier having arrived at its proper station drops through the valve, and in so doing causes the leaves of the valve to separate, thereby breaking the circuit, deenergizing the magnets, and allowing the key and switch to return to their normal positions. In this system the correction-key when used acts as a circuit-breaker.

It will further be apparent that the mechanism herein described and the system involved in the use thereof is applicable to other uses than the specific use in connection with which the invention has been described, and it will be understood, therefore, that I do not limit my invention to the particular use mentioned.

I claim—

1. In a despatch-tube system, the combination with a tube having a plurality of receiving-boxes, switches controlling the entrance to said boxes, magnets for moving said switches, said magnets being included in separate electric circuits or branches of an electrical circuit, a circuit-controlling key for each circuit or branch, means for locking said keys in position to close the circuit and a circuit-breaker at each receiving-box adapted to be operated by the carrier being discharged whereby to break the circuit and permit the keys to return to their normal position, substantially as described.

2. In combination with a pneumatic-despatch-tube system having receiving and despatch tubes, a series of receiving-boxes arranged along said despatch-tube, switches controlling the entrance to said boxes, an electrical circuit including controlling-magnets for said switches and spring-controlled valves in the boxes, said valves being adapted to be operated by the carrier being discharged whereby to control the electric circuit, substantially as described.

3. In a despatch-tube system, the combination with the despatch-tube having receiving-boxes therein, switches controlling the entrance to said boxes, spring-controlled valves adapted to be moved by the carrier being discharged and a controlling-magnet for each switch, said magnets being included in separate electrical circuits or the branches thereof and each circuit or branch having a controlling-key, means for locking the key after

its circuit-closing actuation and the valve at each box being adapted when actuated to break the circuit whereby to release the locking mechanism and deenergize the switch-controlling magnet, substantially as described.

4. A despatch-tube system, comprising in combination a despatch-tube having a series of receiving-boxes, switches controlling the entrance to said boxes, controlling-magnets for said switches, a circuit-controlling key for each switch, means for locking the keys, a magnet controlling the locking mechanism, and a correction-key controlling the circuit of said magnet whereby to release the locking mechanism, substantially as described.

5. In combination with a pneumatic-despatch-tube system having a receiving and despatch tube, a series of receiving-boxes arranged along said despatch-tube, switches controlling the entrance to said boxes, controlling-magnets for said switches, separate electric circuits each including one of said controlling-magnets, a circuit-controlling key for each circuit, a locking mechanism for said keys and a second electric circuit normally open and adapted to be closed by the discharge of the carrier, and a releasing-magnet included in said second electric circuit and adapted when energized to release the circuit-controlling keys, substantially as described.

6. In combination with a pneumatic-despatch-tube system having a receiving and despatch tube, a series of receiving-boxes arranged along said despatch-tube, switches controlling the entrance to said boxes, controlling-magnets for said switches, separate electric circuits each including one of said controlling-magnets, a circuit-controlling key for each circuit, a locking mechanism for said keys, a second electric circuit normally open and adapted to be closed by the discharge of the carrier, a releasing-magnet included in said second electric circuit and adapted when energized to release the circuit-controlling key and a local electric circuit having a correction-key whereby to actuate the releasing-magnet thereby allowing the key to return to its normal position, substantially as described.

EDMOND A. FORDYCE.

Witnesses:

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N. M. BOND.